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THE FUNCTION OF SCIENCE IN SHAPING PHILOSOPHIC METHOD

PHILOSOPHY is first of all Weltanschauung; it becomes epistemology and metaphysics only by interplay with a gradually segregating body of science. Thus it has come about that in the adoption of its method philosophy has been an imitator. Impulses of thought powerful enough to attain historic dimensions have been in their first intention philosophical; but of the immediate issue whatever has been most readily circumscribable in its domain and formulable in its procedure—the sedimentary portion, in a word, which we comprise under the rubric 'science'—has taken precedence in the estimate of epistemological reflection. Certain prepossessions from this source, those of mathematical method and of the mechanical type of atomism, for instance, we have definitively recovered from; others are still with us. Empiricism and rationalism are both methodic schemes which have been defined in the attainment of scientific self-consciousness; whenever epistemology has made general propaganda of either it is the scientific mind that has been in control.

Philosophy has always to learn from science; but what it has to learn is, briefly stated, itself. If at times, and especially during the last half-century, it has seemed caught like a rear-draught in the wake of the tangibly successful truth-seeker, it is to find itself eventually the impelling wind. The office of science is transitional. It is, nevertheless, an indispensable office, and not alone historically so: apart from a material connection between their methods science could not serve as ferment and bearer of the development of philosophy to the point of self-knowledge. The method of knowledge in general is describable, if at all, in terms of the object of knowledge and of the nature of the knower; whatever is peculiar to the method of philosophy must be determined as a function of the peculiar character of its objects: the dependence of epistemology on Weltanschauung thus provides a clue to estimating the place of science in

philosophic knowledge.[1] It is the business of the present paper to trace and define the connection thus outlined.

I. The World as a World of Pure Experience

The thesis that reality, in so far as knowledge can have anything to do with it, is coextensive with experience has been made a cornerstone for epistemologies of widely unlike stamp. If it is claimed as especially harmonious with empiricism it must be on the strength of an assumption that the method of knowledge is not only some function of the object of knowledge, but some function which ties method and object very close together.

The peculiarity of empirical method does not lie in making presentation the prime thing in knowing. Cartesian rationalism does the same: its 'clear and distinct evidence' is *presented* evidence; the observing, even the receptive consciousness, is the fundamental function. The only thing which distinguishes an empiricism such as that of Professor James from rationalism of the Cartesian type is that the former limits the *validity* of every judgment to its psychological career. Summation of experiences within experience is the empiric mode of progression, and summation is ideally never complete: wholes can never be presented. Hence James accurately makes the defining mark of empirical method its procedure from parts to the whole (if there be a whole), and its rejection of the procedure from the whole to the parts. Could we at any time presume to be in actual presence of space as a whole, of the triangle *überhaupt,* of the world in its intrinsic totality, the distinction between empiricism and rationalism would vanish.

What checks the assumption that we *are* at any time in presence of the whole (species triangle, let us say) is only this,—that all thought must be limited by the psychological coefficient of thinking. To the empirical conscience a touch of the inevitable 'here-now' robs of all absolute virtue an 'in presence of'; active knowing must be a process of *spreading*, not one of weaving within a given universal frame. Rationalism errs, therefore, in so far as its process outstrips and distinguishes itself from its material. The empirical domain of knowledge is experience; its process is—experience. The method of knowledge is indeed a function of its object, it is simply the dif-

[1] Awareness of the dependence in question is most vigorous in contemporary empiricism despite its vow to be without presuppositions in its theory of knowledge. The reason for this paradoxical position lies in the fact that empiricism is polemic and critical; it is relatively sophisticated; it is a *return* to experience; whereas spontaneous philosophizing is rationalistic. The more radical empiricism becomes, the more visibly does it lean upon its characteristic view of the world.

ferential of development of that object. Experience as object is *experiencing* momentarily regarded as static and composed; the difference is one of aspect only. In this respect empiricism is always *Identitätsphilosophie.*

The motive to this definition is not far to seek. For true as it is that empiricism has in it a strain of freedom which recommends it to the spirit of adventure in philosophy, still deeper in its temper is the note of prudence; it is experience that teaches us to refrain from *a priori* constructions. Our present speculative impotence is the achievement of empirical science in breaking the spirit of philosophy: empirical philosophy erects into a principle the inhibition thus inculcated. We are called back to experience. By whom? By experience itself. The situation is that of a teacher referring to himself as ultimate authority, and this circle is inherent in empiricism. Such a circle is not in itself a discredit; it means only that the view of the world as a world of pure experience is not sufficient to create any presumption in favor of that theory of knowledge.

II. The World as a Plurality

A pluralistic world, if such were possible, could be taken only empirically. Empirical procedure can indeed do nothing to establish the truth of pluralism, for any evidence must come in the form of contradiction between part and part, or of lawlessness proven in presence of known law, whereas the precedence given by empiricism to the presented particular over the universal makes such conflict impossible: the uncertain universal always yields. But, on the other hand, may not a pluralistic Weltanschauung lend support to empirical method?

Experience as a whole is of all wholes the unattainable *par excellence.* Empiricism may properly speak of 'an' experience and of 'experiences'—but never of 'experience.' Experiences may be comprehensive to any finite degree; experiences of the most various spans and ranges may be woven simultaneously into the mesh of any personal continuum: but each one of them has its limits, be they sharp or vague, constituted by the moment of attention or reflection. Beyond these borders the authority of the insight given in the experience ceases; pretended knowledge of necessity holding good across such borders epiricism resigns, and calls upon all to resign. To the next experience its own world is given anew, and well for habit and action if it turn out to have a structure pragmatically congruous with that of the preceding experience.

The nature of a possible alliance between empiricism and pluralism becomes apparent. If in declaring for pluralism we suppose

ourselves to be making assertions about some metaphysical prime mover of experiences different from themselves, we are simply erecting the admittedly fragmentary nature of psychological experience into an assertion of the fragmentary nature of the world, our own imperfectly responsible bearing toward the parts of experience into a proposition of their irresponsible bearing toward one another. But if we adhere to our definition of reality as pure experience, our pluralism is nothing else than a further exposition of our empiricism. It can offer the epistemology no external support, for the epistemology is the source of the Weltanschauung, and of one piece with it.

III. The World as Fluent and Prolific

Of positive significance for method is a phase of the world whose distinctive value is easily lost sight of in the sweep of pluralism: it is the genuine prodigality of the world, the 'superabundance of life' as different from its 'confusion.' This fertility is not to be described as an assembling, out of the void, of experiences accidentally twinkling into existence, but as a growth and sprouting from the present world as a nucleus, a central hearth and brooding-place.[2] Pluralism legitimately expresses the between of experiences, the moment of segmentation and discontinuity in all transition; but fertility expresses a degree of belonging-together of new and old, a moment of connection in the very material, not alone in the form, of experience.

The prolific world is averse to a world whose character is exhausted in its *subsumedness* under a fixed scheme of premises,—in a word, to the world of the finished system. Now rationalism and system are inseparable. System is not only consummation of rationalism: it is inherent in the procedure. Any bit of knowledge which pretends to have grasped a whole is *in potentia* a closed system with reference to its own defined phase of the world: it is prophetic, even despotic, presuming to govern an infinitude of possible experiences, if not without the consent of the governed, at least in advance of such consent. Along that vista, the whole meaning of the future is exhausted into the present.

The rigidity which empiricism feels in system is largely the claim of this too complete anticipation. The very fluency of experience cries out against it. For as experience has a time-factor,

[2] The pluralist often speaks as if in the growing world enhancements of reality took place beyond the region of those assemblages called minds, and then, as from a distance, associated themselves with these assemblages. The violence thus done to empirical principles is quite gratuitous: in all strict empiricism, mind is the brooding-place of the world within which accessions are constantly developing.

and as this time-factor is determined by the continuous irruption of the unanticipated into the field of consciousness, the system valid for any moment can not be the system closed in any prior moment.

May it be that each moment has its own system? The conscious adoption and prosecution of methods aside, is there any escape from that inveterate disposition bred in the blood of every experience to *be* a system, and a system which touches absolute wholes? To the perspective of empirical psychology the instinct, if we may so speak, by which each experience as it comes places itself under an all-covering sky inherited from its predecessor and to be imposed upon its successor is an unexplained marvel: but if it is real, it is possible; and if it is possible, something about it is necessary.

The solution of the difficulty must lie in determining the sphere within which conflict could possibly occur between a new experience and an established system. It is clear that experience which enters merely as presented material can come into no conflict with the system of the previous moment: it can only displace other material. And likewise, only system can conflict with system. Empirical openness to a range of new experiences (in science or travel, in history or adventure, literal or spiritual) is not an unloading of system to make way for the volume of entering material; it is a mobilizing of system to encourage re-formations within its structure.

The conflict of fact with system from which empiricism argues does not exist. But conflict exists, and how is it to be explained? To feel the resistance of system, a new experience must be itself a system; a fact simply as sensation can answer no question, but it can be raised to the significance of a type; experimental conditions are conditions which endow the particular instance with the power of a whole, and they are conditions defined by and representing an existing system of wholes. Only an existing whole could thus empower a fact; and, on the other hand, *given the existing whole, facts inevitably acquire the force of wholes.* In the presence of system every incoming experience takes on as if by induction the aspect of counter-system. It is evident that an encounter in which the facts derive all their opposing power from the system in which they are to effect changes can not issue in the demolition of system, nor in its discredit. Hence the foe of empiricism in this respect is not rationalism at all, but an energy-factor, the inertia of internal readjustment; and empiricism instead of a theory of knowledge here appears as an ethical principle, demanding energy and agility in reconstructing hypotheses. Here lies the real conflict.

What is of strictly epistemological value in the contention of empiricism is the definition of the laws of encounter between system

and experience and the consequent readjustment. They may be briefly put thus:

1. When a system is confronted by new experience the system developed in the new experience stands to the original system in the relation of (1) congruence or (2) incongruence or (3) addition, or two or all of these.

2. In the first case the systems pass to coalescence: the fact is said to be 'understood.'

3. In the second case the first system is altered in part and partly remains unaltered. The alteration takes place upon the principle that the original system must yield to the system of the newly presented fact at whatever cost to itself: this is the fundamental postulate of empiricism. The fact becomes understood by determining the system, the presentation containing an absolutely fixed point. But in order that the new system shall be definitely determined there must be another fixed point, namely, some whole in the original system: this is the fundamental postulate of rationalism.

4. In the third case the original system is not altered, but *further determined.* The new fact as new is not understood, but becomes the ground for understanding further experience. This is the primary process of growth; and as the new acquisition becomes active in understanding more of its own kind, its characteristic wholes and particulars define themselves.

The relation between empiricism and rationalism thus appears in a new light:

1. These two methods historically pitted against one another are both necessary in experience.

2. The relation between them is not one of mere alternation, nor is it a disjunctive relation in such sense that the more of one we employ the less we rely on the other: this is true of the conscious employment of method but not of the actual work of experience.

3. The relation is one of concomitant variation: the two methods are direct functions of one another, so that as the scope of one widens, that of the other must deepen. Our empiricism is a measure of our abundance; our rationalism is a measure of our selfhood in presence of that abundance. For the system of any moment is the 'self' of that moment.

IV. The World as Supra-rational and Infinite

Current empiricism has not rejected all alliance with system. It has stood only for a democracy of individual experiences, such that unifications in general shall give precedence to facts in general. The gradual extension of system, tightly woven at the level of

sensible fact, increasingly unfinished and revisable as the wholes in question become complex, abstract, comprehensive, it inclines to assume as part of its own province. It identifies itself, in brief, with the method of natural science.

The wholes which philosophy is interested in securing for knowledge are precisely those which in the empirical order should be last of attainment, and according to the scale of scientific assurance most hypothetical and liable to revision. But philosophy has attributed to them superior certainty and stability: its special mission is taken to be the establishment of truth both universal and necessary, that is, the determination of wholes which incoming experience can have no tendency to modify. The scientific system is most fixed at the level of physical fact, and increasingly open above; philosophic system is in its nature *closed at the top.*

Such a position opposes empiricism in its last depths. Not system is its ultimate aversion, nor even the pretended knowledge of wholes, but the pretended knowledge of ultimate wholes, assertion of the finishedness of the infinite. Against such pretense it makes the final appeal to its Weltanschauung and exhibits its own final meaning. The whole cult of the given is at heart an assertion of the final impenetrability of existence. Givenness is the darkness, the silence, the inexorableness of what is. In data of wider scope the possibility of solution is excluded by the nature of reason: let reason with its necessities and its symmetries face the irregularities of natural configurations, the chaos and evil in the very world of spirit, —they are incommensurable. Against all fixed optimism, intellectual and moral, empiricism declares the fatuity of assurance: necessity, if there be necessity, has its roots nowhere nearer than in the absolute,—our cleverness has not surprised its secret.

There is more truth and depth in this view of the world than in many a facile monism. But in spite of the truth, there is not lacking a strong presumption that the knowledge of these very ultimate wholes must be within our reach. We have observed that the system of any moment is the self of that moment. It follows that the continuity of system from one moment to another is the measure of our personal identity. If, then, we have any persistent identity throughout the whole series of our experiences, there must be certain wholes, such as space, the physical world, the conscious other, experience itself, which are invariant for knowledge, which, as placers and interpreters of all incoming experience, the course of experience can have no tendency to modify. We are thus driven, as before, to ask what is the precise logical force of that view of the world which empiricism at last depends on.

First of all, to say that an infinitely distant goal is attained by methods having a finite rate is a manifest contradiction. If the rationalism which philosophy practises is identical with the rationalism of natural science, there is an end to the matter. The wholes which natural science projects are admittedly divined, hypothetical, not absolutely known. It is an essential characteristic that they be flexible and replaceable. They are not *knowledge*. And in fact, the chief root of the aversion to system is this: that it adopts the method of hypothesis, and then asserts certainty. It is the note of constructive ingenuity that is more than anything else resented in philosophical system.

Constructive ingenuity, the living spirit of physical method, is even there exotic. The objects which properly invite ingenuity in analysis and ideal reproduction are things which have been ingeniously put together. There is the same propriety in so regarding the physical universe that there is in regarding the circle as a function of chord-structure. Scientific hypotheses are a method of infinite progression toward expressing physical nature in terms of contrivance. From this point of view, anything that can be regarded as a composite, or as a resultant, or as an effect, is open to attack by the constructive imagination of science.

If physical nature is thus only in an accommodated sense open to approach by constructive imagination, how much less the complete nature, the object of philosophy. Whatever savors of inductive cunning in philosophy must fall under distrust. The system of Leibniz, liable as few others to mechanical interpretation, strikingly illustrates how metaphysics fails of inspiring confidence in proportion as its ingenuity excites admiration. Kant himself, exercised more than any other to keep apart the methods of science and transcendentalism, falls into offense when he expresses the latter as inference from the phenomena of knowledge to their necessary conditions, a method suitable only to effects and resultants. In so far, then, empiricism in its rejection of system is in perfect right; the universe is not a composite nor a resultant nor an effect; the rationalism of natural science is out of place in philosophy.

In the second place, empiricism points truly to a certain disparity between the experience-value of any system and the experience-value of any fact. System is related to fact on the one side as infinitude to finitude, for its range is eternity, while that of the fact is the psychological moment; but, on the other side, system stands to fact as finitude to infinitude, for the fact is inexhaustible while system reaches only a limited number of its phases. There is more in any fact of experience than our rationalisms discover, and, on the other

hand, we may easily rationalize out of a fact more than it will support. In these truths we have the real ground for the fundamental postulate of empiricism defined in the last section: the adjustment of the infinitude of the universal to the infinitude of the fact is an endless problem, and fact must be the prime mover in bringing about that adjustment. System is inert; it sees beyond itself only by the aid of fact; it grasps wholes, but is unable to finish their definition; it has no internal power either of growth or of correction. It is in the fact, in the infinitude of the not-yet-subsumed, that the *life* of system must lie, and thus the present system must always yield to the system of the incoming fact.[3]

There is nothing here which negates the knowledge of ultimate wholes, and the claim to possess this knowledge seems less preposterous when its infinitude is seen as the mere nucleus and clue of the finite self in presence of unfathomable reality. The positive proof that we have such knowledge, that the discontinuity, the fertility, the very unfathomableness, of the world are known only as held within an experience, so that to every partiality that can be alleged in knowledge there can be shown a prior wholeness, I need not undertake in detail. It is striking that that supra-rational character of the world in which the essential meaning of empiricism is rooted, is a character which is least of all discoverable from an empirical standpoint, since the defining character of the empirical world is that it lies all on the surface.

The result of the argument, constituting a platform for a direct study of philosophic method, may be summarized as follows:

1. Neither scientific empiricism nor scientific rationalism is a position of stable equilibrium in knowledge, and neither can be identified as the method of philosophy. Neither can accomplish, though neither can dispense with, the knowledge of wholes.

2. There is no such thing, strictly speaking, as 'an' experience having limits. In every experience of spatial objects, we are actually *in presence of* the whole of space: there is but one continuous experience of space for any individual life. As the perspective center of any moment is a point from which all of space may be

[3] As always in empiricism, so here, the ethical mingles with the purely theoretical. The old system, *i. e.*, the accomplished structure of self at any moment, tends to deny the new, not by inherent opposition, but simply by being in possession. It is often willing to think little of the world for the sake of compassing it within the acquired construction, for departure and readjustment require energy. Empiricism holds that it is better to spare energy on the connections and give it to new structure than by a false loyalty to miss the fullness of things,—it is better to have wealth with looseness than unity and poverty therewith: so the sentiment of the proverb is reversed.

reached by continuous variation, space itself being the invariant as perspective changes, so the relation of any other whole to any other particular belonging to it is a presence with the particular by virtue of a differential of continuous variation.

3. The self of any moment of experience is a system of these invariant wholes. Every growth of experience adds to the sum of this possession, so that the body of our *a priori* knowledge is not a static and forever fixed total (as Kant regarded it), but an eternal evolution.

4. These wholes are *given* with experience. Space, the physical world, the world of ideas, the absolute, are quite as *near* in pure experience as the sensation.

5. The work of philosophy is to recognize and define these wholes. Its process is the consummation of empiricism,—empiricism without limit, still more radical,—and of rationalism.

6. For these wholes constitute at once the beginnings and the limits of the infinite series whose construction is the work of science. Both ends of such series must be given, in order that the direction of the series may be determined and the goal identified. As line and curve are both given in this sense, and each may be regarded as the limit of an infinite structure whose elements are of the other, so, for example, are idea and motion both given elements, heterogeneous, in terms of each of which all definable characters of the other may by infinite construction be represented. We may build the framework of our physics from sensations (Mach), or of our psychology from mechanics, outward.

7. None of the wholes is intrinsically more simple than any other.

8. None of them has any superiority as knowledge, or as point of beginning.

9. For neither part nor whole has any inherent knowledge-value. The givenness which is the mark of our passivity in knowledge and of the ultimate darkness of the world to us, is also the mark of *finality* in knowledge; but the given is neither beginning nor end apart from the work of science which fills the field between given and given. Light and penetration exist for us only in so far as we are active; thus both the wholes of philosophy and the particulars of immediate experience derive their knowledge-value from relation to the intermediate scientific structure.

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THE UNITY OF MENTAL LIFE

THE attacks on the theory of association as 'atomistic' imply a more or less unitary consciousness which is given as a postulate, as 'selbstverständlich.' I shall here endeavor to find out how far unity of consciousness is possible, such unity being considered in its entirety, as temporal from its beginning to its present existence; in sections, as partially temporal, *e. g.*, from day to day; and, finally, as a single moment.

From the results reached by contemporary psychologists, we may say, that (1) all we have at any instant is the present moment, whether such moment have past or future reference, and (2) any explanation of such present moment may, in crucial instances, descend to the particular terms of present objects, instead of the more general psychological expressions. In discussing the unity of consciousness, therefore, it becomes necessary to show how such unity if existent, is contained in, or represented by the present moment.

It requires no special acumen to see that even as a memory, unity of consciousness as a temporal whole, in its entirety, is scarcely possible. Gaps occur here and there, certain positions are not accurately placed as to before and after, and sketchiness of the worst kind prevails. Some previous states, treasured in the memories of others, are not even recognized by the person concerned. The fictitious unity which might be possible as a series of images is, even as such, broken, scrappy and sketchy. We must move our inquiry nearer the present if we are to find unity at all, for unity with the entire past, even if of a representative and schematic character, there is none.

Taking now any section of past states close to the present, we may represent such section by a series of images, *a, b, c, d, e, . . . etc.*, which pass before us. Each passes and is succeeded by the other. Each one as it passes, however, acquires a certain meaning because of its relation to the one preceding; and the final one sums up the rest. The series would then become, *a, bm, cm*^{1}, *dm*^{2}, *em*^{3}, *. . . etc.*[1] The final mental state has implicit in it, as it were, all the preceding states; its serial meaning stands for whatever of the preceding states we choose to call a complete series. The preceding states are not contained in the present state, in the sense of a condensation or an amalgamation, but the meaning of the present, as serial, is sufficient to determine the series, if we wish to explicate the present moment. When the meaning is to be 'unrolled' so to say,

[1] See Stout, 'Manual,' 2d ed., p. 94.

the series can again be revived as far as is necessary. All there is is the present moment, and representing such moment, or whatever in it relates to the series in question, by p, pm^n would constitute whatever serial unity exists; the series is implicit in the meaning of p.

In the actual moments of its existence, the various members of the series may be broken, *e. g.*, by sleep, by interruption from external objects, stimulation, or the like. We might represent this by a, bm,—cm^1, dm^2, . . . etc. Such interruption, however, would not interfere with the unity of the series as represented by pm^n. If the interruption in no way interferes with or affects the meaning of p, as the present representative of the past moments, serial unity would still be intact. The summation state might be simply consciousness of a word or of a sentence.

All the past mental states can not however, all be adequately represented by one single series; rather a number of series exists, different groups of which form different systems. The mere fact that interruption of any single series is possible, implies the existence of a single state or series different from those interrupted. What we would then have, as thus far considered, would be a number of unified systems; or, to put it differently, a number of potential unities of consciousness, these existing as dispositions. As such, these unities may be, and in many cases are, distinct and separate; but being experienced by one person, they are necessarily considered as one totality; as belonging to one person. I shall return to this later.

There now remains to be considered wherein consists the unity of the present moment, whether, in such moment, we have impressions or images. In what manner can it be said that the various impressions streaming in form one; and even in one kind of impression, *e. g.*, visual, how far is unity possible? In any single visual field there are perceived a number of objects, distinct and separate; and yet the whole field seems as one. I see the objects before me as objects, and also as forming one totality. Upon closer examination, however, I find that it is only visually that I have unity; only upon the addition of discrete motor impressions do I have a number of distinct and separate objects. I do not, for example, see the books before me on the desk as books, till I turn my eyes towards them, or become conscious of them separately. Without this added consciousness, whether present or revived, I have simply a visual something, without parts or separately contained unities. This visual something becomes chopped up into parts, as it were, by the added motor elements.

In the visual field, therefore, as usually considered, we have co-

existing two kinds of impressions, visual and motor. It is customary to speak of one moment of consciousness, as if consciousness were one pulse of feeling, or what not, containing a number of qualities, etc. This, however, appears to be a relic of the older philosophy, and is not the actual experience at any moment. It seems better to speak of concomitant moments of different kinds of consciousness. When I see a book, my visual impression *per se* remains what it is, and, as visual, in no way changes or fuses with my tactile impression when I touch it; the two remain distinct and separate. · So, too, when I tap it, the auditory is something distinct from the visual or the tactile impression, and no more fuses with them than they do with each other. It might be objected that this would result in as many kinds of consciousness as we have kinds of impressions, *e. g.*, in the visual, red, blue, green, and so on. Strictly speaking, this is true. But in any one kind there are certain characteristics which lead me to lump them together under the term visual; my other knowledge also aids in this, as of the single end-organ, more or less definite brain centers, etc. There is, however, no such similarity between the visual and the tactile, or visual and auditory; and, moreover, they can coexist together. When they occur together, considered as such, they constitute so many different objects. When, however, I take only one attitude towards all three, I stamp the object as one and external. The whole combination aids us in stamping the object as real and external; though we may react to three objects, *viz.*, visual, tactile and auditory for some special purpose, if necessary.

It is probable that unity of the visual field of consciousness has greatly influenced those who consider consciousness as a unity, as a whole. But if we examine auditory or tactile consciousness, such unity is not shown. Sounds come by fits and starts, as do tactile and other sensations; any unity they have as such must be of the serial order. A fictitious unity is given them when they occur in a visual background, or are set against a body feeling which in different degrees is always present. But taken in themselves, the former impressions are discrete, and unity only as serial is possible.

If we have moments of consciousness in the present only, how account for the continuum of consciousness? Granted a unified visual field, how do we pass from moment to moment? We see no gaps; the present is always with us; and even in a changing visual field there is a continuum. So too we have a continuum in the body feeling before referred to; though the rhythmic processes add a serial unity to the unity of the present, to the feeling of the body as a whole. We can not, however, on this account, speak of a general continuum of consciousness. There is no continuum in our motor

or auditory consciousness, nor any in our olfactory or gustatory, though these are less important. We may have a continuity within the series as represented by the meaning of the present moment, but there is no continuum as such. Here too we are apt to give the characteristic continuity of the visual field to consciousness in general, though this is obviously so.

We know nothing of any continuum as such, and as a present moment in a present and more or less stationary visual field or in organic feeling. Our attitude, determined by other factors, gives us a before and after. We have, however, such continuum more apparent in changing the visual field either by turning the head or by having a succession of objects presented before us. To describe this, it is more convenient to descend to the particular field of objects and see the state of affairs actually present. In any moment of visual consciousness, therefore, what I have is a field of objects of whatever kind they may be. I see before me, for example, a desk with the usual accompaniments. Now, speaking in the particular terms of objects and leaving aside for the moment the more general psychological expressions, the field before me and seen, consists of a center of most distinct and clear objects with an outlying border. Nothing more than this is meant by the terms 'focus' and 'margin'; these expressions being merely more general than the specific wording here used. I see some books before me most clearly; also some pens, paper, a ruler, knife and what not. At the sides, the outline of the desk is rather hazy, and beyond is a dim, undefined background, whether the wall, door or something else, is not quite plain from the present perception as such. Now I turn to the right. As I turn, the outlines to the right always present, it must be remembered, in the state of consciousness just described, become more distinct, while the dim border recedes further to the right. The objects at first clear become dim and obscure, and disappear in the border to the left; but they are still present and in consciousness during the transition, until their gradual disappearance. I arise and walk to the door. In the same sliding manner, as it were, new states succeed. There is a continuity of objects in the one visual field; for the motor constituents are here also considered. But each one before passing out of view merges into dimness, and gives place to another which was dim when the first was clear, and which became distinct with the passage of the first into obscurity. There is thus a continuum possible by this sliding arrangement; the continuity which exists is due to the passage of an undifferentiated something (the hazy and obscure border) always present into a center of clearness and light.

Whether, however, we have continuity of this close kind, or

whether of the passing moments of motor or auditory consciousness, each consciousness can have unity only as before and after in a series. My present moment is all I have and contains in it all the unity there is possible for the passing states. If, afterwards, by a series of attitudes, I place certain moments in a past order, it is as each one sums up the ones preceding, has an acquired meaning due to its position in the series, and as the last one represents all, that unity is possible. Without the addition of such meaning to each of the succeeding moments, they all must remain discrete and separate.

Each of the present moments as it exists is not a separate entity apart from *me;* it is my present; it has existence only as it is *my* passing moment; and so, too, the meaning in any present moment representing a past series is meaning, not in the abstract, but meaning for *me*. Whatever meaning is present is due to the attitude taken towards the present; such attitude being the reaction itself or the tendency to react in a more or less definite manner. We have, moreover, as long as consciousness is present, as long as the objects are before us, a certain body feeling, a certain awareness of our body in a certain manner. However different any number of series or systems of dispositions may be, whether they become either actually realized or remain implicit in the meaning of some present moment, they all have with them this body feeling, this consciousness of the attitude taken. They thus belong to me; they have no meaning, as far as I am concerned, without me. Certain feelings, certain attitudes approximately alike, stamp the objects in the present as similar, different, past or future, and the like. If any word be present, this word again owes whatever meaning it has to the attitude taken. It is only in this manner that a total unity, unity of the self, has any meaning.

We know nothing, therefore, of any unity other than that either actually existing, or that represented by the meaning in the present, and such unity must be either that of concomitance or that of a series. In the former case, the single background holding together the discrete elements, as it were, is the visual field or the body feeling; in the latter case the series is implicit in the meaning of the present moment. Unity as representative, therefore, can be possible only as serial; for we can have but one present moment; and to bring up the one preceding is only possible when the actual present has the necessary meaning; for the two moments can obviously not be present together. It is with representative unity that the theory of association plays so great a part. It too often has been the custom to approach the subject in a somewhat reverse order. The various constituents of the series are not so many discrete moments which must

be hooked together by some transcendental spirit, as a train guard couples cars. Physical analogy has probably done much to lead us astray. Rather we find such a state of affairs that if we remove association, the states become separate and mean nothing. Serial unity has implied in it association of the different members. We do not add association to the separate moments and then build up our unity. We have whatever unity there is already there; finding in it association, we endeavor to discover some stable principle, laws or forms, whichever the case may be. We have, then, this peculiar state of affairs: unity of consciousness instead of destroying any theory of association, can not exist or be thought of without it. The present moment, standing for the series, has implied in it association of the various members; remove the association, and the series falls into a number of separate, disconnected units. Atomism, instead of being a result of association, is inevitable if we remove association. For convenience sake we treat association as separate, and the different mental states as separate, but in actual existence, such separation has no place. We do not add association to the ideas and get a unity. We have a unity, and for purposes of discussion break it up into ideas, feelings or what not, on the one side, and association on the other.

The moments of consciousness succeeding one another, and giving rise to a series of which each term has implicit in it those which preceded it, may, as above, be represented as follows: a, bm, cm^1, dm^2, em^3, $\cdots$, etc. While we represent the series in this symbolic form, still, as actually existing, one member passes on after the other, and each, as it exists, sums up those preceding in its meaning. Representing the present moment by pm^n, m^n, would symbolize the meaning in the present moment representing the series; and to make such meaning explicit, we would have to go over as much of the series as is necessary. In such a process we do not pass backwards over the series; pm^n rather is the series implicit, and as such begins with a certain member which is taken as the first, and which develops the series as far as is necessary. Once a series has thus been formed, each member, upon a second or other revival, has an additional meaning given it as leading to the succeeding member, previously existent. The series might then be represented thus: an, bmn^1, cm^1n^2, dm^2n^3, em^3n^4, $\cdots$, pm^n. Taking for example any member, cm^1n^2, m^1, would imply an, bmn^1, leading to cm^1n^2 (not bmn^1, an, departing backwards from cm^1n^2) and n^2 would represent the tendency of cm^1n^2 to pass on to dm^2n^3, etc., and n^2 would not be anything never experienced before, but would be the result of the previous successions. In the first member of the series, an, n would tend to pass into the succeed-

ing members, because *n* is the result of the previously existent succeeding moments. I wish to emphasize this, because in criticisms of associationism this future reference is often taken as an argument showing that something other than association must be present to allow of such future reference, purpose or what not; but this is simply the result of some series which has already passed before.

To make the matter more concrete, the example given by James[2] is as good as any. As he shows, the word 'ages' has a different meaning because it is in a different series in the following two cases:

> "I, the heir of all the ages in the foremost files of time"
> "For I doubt not through the ages one increasing purpose runs."

In the one case the forward movement towards 'ages' and the, fromward, movement onward differ from the similar tendencies in the other instance. It is hardly proper to speak of a backward reference, for the series giving the meaning leads up to 'ages'; and to make the resulting meaning in 'ages' explicit, we do not go over, *e. g.*, 'ages the all of heir,' etc., backwards, but we start at some point, *e. g.*, 'the heir,' and carry it onward towards 'ages.' It is this which gives serial meaning to 'ages.' The reference onward from 'ages' again is the result of previous experience with the entire line, and is not inherent in 'ages' as such. This future reference is likewise the result of a past experience.

There is a danger of confusing the word 'implicit' with some sort of fusion which constitutes the meaning. The meaning in the present moment, as far as the series is concerned, is not the result of a fusion of all the preceding members of the series; it is not necessary to consider each member fused in the one succeeding. Nor need there be any single preceding member present in the moment existing. All we have is this tendency to develop the series, the attitude taken and representative of the series; and this, when developed, when made explicit, will give rise to a series which, of course, will be somewhat modified because of the repetition.[3]

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[2] 'Principles of Psychology,' I., p. 567.

[3] See G. E. Müller und A. Pilzecker, 'Experimentelle Beiträge zur Lehre vom gedächtniss,' 1900, ch. 6; E. L. Thorndike, 'Animal Intelligence,' 1898, pp. 65–95; H. Münsterberg, 'Beiträge,' Heft 4, 1892, pp. 23–27; G. F. Stout, 'Manual,' 2d edi., Bk. I. cl. II.; W. James, 'Principles,' I., pp. 336–342; A. Binet, 'L'étude expérimental de l'intelligence,' 1903, ch. 4.

REVIEWS AND ABSTRACTS OF LITERATURE

An Essay on Eastern Philosophy. Y. MOTORA, Professor of Psychology, Imperial University, Tokyo. Leipzig, R. Voigtländer's Verlag. 1905. 32 pp.

This brochure is written by a Japanese of western training in halting English, and is printed in Germany with abundant typographical errors. The subject-matter itself is sufficiently subtle to have warranted giving it the clearest presentation possible, at least such a presentation as would have been secured through English revision of the manuscript and proof.

The title is in one sense too ambitious, and in another a misnomer; too ambitious in that not even an essay can present the theme of eastern philosophy in thirty-two pages, a misnomer in that at least half of the pages are taken up with Professor Motora's own views on psychology. The whole is better described as an essay by an eastern philosopher on the psychological interpretation of Buddhism. The Buddhism that he discusses is that of the Japanese type, and particularly that of the so-called 'Zen' sect. The style is confused and disconnected, due in part, undoubtedly, to the difficulty of using a foreign language easily, but also to the author's failure to distinguish scientific from philosophical thinking.

But the whole is interesting as coming from a foreigner with its English dress, as showing the influence of western training on an eastern mind, and as indicative of the growing unity of human letters; it is also valuable in its evident intent of making Japanese Buddhism intelligible to western minds. I will attempt to smooth out in part the expression of Professor Motora's ideas, and at the same time preserve in the following condensation his own groupings.

General View of Eastern Philosophy: By eastern philosophy is meant that of India, China and Japan. The philosophy of each of these nations is distinct, but there are also common characteristics which permit eastern philosophy as a whole to be contrasted with western philosophy. The Hindoo and Buddhistic philosophy of India made Confucianism more metaphysical, and Japan received what both China and India had to give. In logic, the Hindoos early developed an inductive system. In psychology, Buddhism divides human nature into two parts, the changeless and the changing; Confucianism into the good and the bad. In religion, Buddhism has two systems, 'depending-on-another system and self-depending system'; in the former salvation being through the Savior Amida, in the latter through personal contemplation.

The Idea of Self in the Chinese Philosophies: The development of the idea of self Professor Motora finds characteristic of eastern philosophy, but his quotations without interpretation from the Tote-King do not make clear the conception of self as held by Taoism. Mencius maintained that human nature is good, because of the four feelings of pity, shame, altruism, and good and bad; and that it goes astray only through bad influences. Junshi, on the other hand, held that human nature was bad;

others that it was both good and bad; still others that it was neutral. Finally, Shushi, under Buddhistic influence, wrought theoretical peace by dividing human nature into an original nature and the disposition, the former of which was good; the latter was good or bad according to external influences.

The Idea of Self in Buddhism, Especially in the Zen Sect: Buddhism divides mind into the changeless and the changing, the latter being composed of the five senses, consciousness, and the feeling of self. In the Zen sect there is no dividing of mind, but 'by long practice of meditation, man comes to experience such a state of mind, in which there is no representation, and only the pure self remains.' Professor Motora, from a psychological and curious interest, spent a week in a Zen monastery, and reports: 'If I compare the psychology which I had learned up to that time to a plane surface, that experience is like a third dimension.' The sect was originated by Dharma, who went to China to spread it, whence it came to Japan. With eyes closed and mind quiet, or else meditating on some such question as, 'What is your original estate?' the moment of self-enlightenment comes when the mind experiences itself as 'pure activity' (*cf.* Fichte).

Modern Problem of Psychology: The foremost problem of modern psychology Professor Motora finds in the relation of mind and body. But the relation between the psychical and the physical is no more mysterious than that between sequences of physical phenomena. The best we can do, in either case, is to point out functional relations between phenomena, without reaching absolute equality between any two.

A Scientific Explanation of the Zen Sect: This modern Buddhist sect is a practical cult whose mental experiences the author seeks to explain. This sect reaches a direct experience of energy. Since energy is one, psychical and physical energy are both forms of one, and are convertible. "In a word, mind is neither merely a conscious being, nor merely one of activity, but conscious activity accompanied by more or less of feeling-tone." In the Zen experience the mind is kept in a state of general tension, all particular forms of activity being inhibited. As associationism makes mind a series of objects without a subject, so 'Zen' makes mind a subject without a series of objects.

The Relation of the Subject to the Object: Epistemology makes the subject only the knower, but man is also an actor, and just as man both adapts himself to his environment and adapts his environment to himself, so the subject adapts itself to the object, and also the object to the subject.

The Subject as Percipient of the Object and its Selective Function: As percipient, the subject is plastic, and adapts itself to its object. To remain in consciousness, the object must have a power of self-persistence. Representation is a persistent form in consciousness to which the subject adapts itself. An organism is first sensitive, then selective. As sensitive, the subject is percipient; as selective, the object is adjusted to the subject.

The Relation of the Subject and Predicate to Consciousness: Con-

sciousness divides itself into two parts, subject and object, and at the same time consciousness is a resultant of the interaction of the two. This seeming paradox is resolved by observing the distinction between psychological subject and logical subject. Psychologically, consciousness divides itself into subject and object; logically, consciousness is the resultant of the distinction between subject and object.

Psychical Potential and Psychical Reality: These are Professor Motora's terms, coined to show the relation of his psychology to the Zen sect. 'Psychical potential is an hypothetical agent, and must always wait for physiological activity to realize itself to the psychical reality.' The psychical reality is the germ of future psychical development, and includes all psychical activity, being to the author a more comprehensive term than consciousness. Feeling plays the prominent part in the original psychical reality, leading to impulse, and finally to knowledge. The pure state of psychical reality is the result of interaction between external stimulus and the undifferentiated organic being. 'It is the water upon which various forms of waves, as knowledge, desire, purpose and the like, are produced.'

Psychical Reality and Representation: The existence of representation presupposes three things, the sensitive sense-organ with muscles and nerves, the object that gives the stimulus, and the resultant consciousness.

The Development of the Will and Personality: The will is analyzed into three essential constituents, desires, concepts and the physiological mechanism of execution. The essence of personality is will working with a persistent motive and a comprehensive concept.

Concluding Remarks: These are intended to show the relation of the preceding psychological thoughts to the Buddhistic conception of the *ego*. The changeless element in human nature is called Shin-Nyo in Buddhism, the changing element, the senses, consciousness and the feeling of self, is called Araya-Shiki. Professor Motora identifies his 'psychical potential' with Shin-Nyo, and his 'psychical reality' with Araya-Shiki. Shin-Nyo, the world-soul, the eternal and unchanging existence, may be experienced in life before death as 'the direct experience of psychical reality.' Professor Motora confesses in conclusion that the Japanese Buddhist may not be satisfied with his explanation.

The essay leaves several things to be desired. We should like to know how the 'Zen' of Japan is related to the 'Yogi' of India, and how Shin-Nyo of Japan is related to Nirvana. What more, after all, is the Zen experience than a case of dispersed attention, or, at most, self-hypnotism? Too frequently the argument suffers from reliance on analogies; sometimes it is not clear, and at least in the discussion of mind and body the solution is reached too easily by offhand reflection. The author promises us a book, however, which may relieve some of these difficulties.

H. H. Horne.

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An Approach to Philosophy. RALPH BARTON PERRY. New York, Charles Scribner's Sons. 1905. Pp. 250.

The purpose of Professor Perry's book, as indicated by its title and contents, is to elucidate philosophy to readers unfamiliar with philosophical problems and systems. To quote the author: 'the present book is written for the sake of elucidating the inevitable philosophy. It seeks to make the reader more solicitously aware of the philosophy that is in him, or to provoke him to philosophy in his own interests. To this end I have sacrificed all else to the task of mediating between the tradition and technicalities of the academic discipline and the more common terms of life.' Thus the chief aim of the book is pedagogical.

To accomplish this the author outlines his program as follows: "In Part I. various great human interests have been selected as points of departure. I have sought to introduce the general standpoint and problem of philosophy through its implication in general life, poetry, religion and science. . . . I have in Part II. undertaken to furnish the reader with a map of the country to which he has been led. To this end I have attempted a brief survey of the entire program of philosophy. . . . The scope of Part II. is due in part to a desire for brevity, but chiefly to the hope for furnishing an epitome that shall follow the course of the *natural and historical differentiation* of the general philosophical problem.

"Finally, I have in Part III. sought to present the tradition of philosophy in the form of general types; . . . to acquaint the reader with philosophy in the concrete; to show how certain underlying principles may determine the whole circle of philosophical ideas, and give them unity and distinctive flavor. Part II. offers a general classification of philosophical problems and conceptions independently of any special point of view. But I have in Part III. sought to emphasize the point of view, or the internal consistency that makes a *system of philosophy* out of certain answers to the special problems of philosophy."

This program is admirable. There is, however, room for calling in question the advisability of emphasizing the importance of the system and relatively minimizing the importance of the special problems of philosophy. Professor Perry's view is stated very clearly and confidently: "That which lends philosophical quality to any reflection is a steadfast adherence to the ideals of inclusiveness and consistency. Hence, though the philosopher must of necessity occupy himself with subordinate problems, these can not be completely isolated from one another, and solved successively. Perspective is his most indispensable requisite, and he has solved no problem finally until he has provided for the solution of all. His own peculiar conceptions are those which *order* experience, and reconcile such aspects of it as other interests have distinguished. Hence the compatibility of any idea with all other ideas is the prime test of its philosophical sufficiency. On these grounds it may confidently be asserted that the work of philosophy can not be assigned by the piece to different specialists, and then assembled. There are no special philosophical problems which can be solved upon their own merits. Indeed, such problems

could never even be named, for in their discreteness they would cease to be philosophical."

Though the philosopher's ideal is 'inclusiveness and consistency,' he may, and we believe he should, follow a method of investigation whereby he makes each problem a special one, and in which he proceeds from the solution of special problems to the formulation of his system. Those philosophers who have not done this have probably simply taken one problem and allowed its solution to prejudice that of all others. In short, they have been the worst sort of specialists. Thus, if philosophy is to escape the subjectivism of the individual philosopher and to be truly scientific, or objective, her problems must not be the outcome of any system, but must arise from facts universally observable. However, the important question is whether or not the isolation of problems, that is, their careful differentiation from one another and their solution in their own right, has not been the chief means of progress in all the sciences and no less in philosophy. Those who believe that it has, must, in introducing the beginner to philosophy, place the emphasis upon the special problems, their differentiation and their solution.

In its endeavor to attain the ideal of inclusiveness and consistency philosophy must be patient and cautious, as are the special sciences; and in any case it must rest upon the more sure basis, the solution of its special problems.

Then, too, the history of philosophy often reveals the presence of the same problems irrespective of system, and shows us again and again that philosophers have made their greatest and most permanent contributions in their solution of special problems.

Finally, special problems form the real common ground and forum between the various schools; for here we can understand one another and can discuss most profitably the foundation of the different systems.

The convictions thus roughly stated make the reviewer incline to the opinion that an introduction to philosophy—in distinction, be it understood, from a course in the history of philosophy—should devote itself almost entirely to the exposition, elucidation and differentiation of problems, and to their history and solution. The history of philosophy will give an account of the systems, their origin and historical relationships, and of their contributions.

Thus the reviewer would have preferred a much fuller presentation of the subject-matter of Part II. and relatively a much shorter one of Part III. Yet Part III. is especially the portion of the book, practically half, for which the reader will feel grateful to the author. Professor Perry's account of the four chief types of system, Naturalism, Subjectivism, Absolute Realism and Absolute Idealism, is very suggestive, both in its elucidation of each system and in its historical illustration.

The style of the book is in some respects excellent, in others by no means so good. The sentences are individually clear and the author has mediated well 'between the tradition and technicalities of the academic discipline and the more common terms of life.' Still the undergraduate

will probably find Parts II. and III. somewhat dull and far from clear. The sentences are clear, but the sections and chapters as such are not clear. Here it will be hard for the beginner to grasp the subject-matter and chief points, for the lines of thought seem, as one reads, to be continually broken.

All this does not contradict the praise which is the book's due. Its general program is good, it is very suggestive and thoroughly consistent.

The extensive scope of the book makes a discussion of the different chapters and their sections difficult. In general the author has purposely and successfully refrained from being a partisan. His own philosophical convictions and contributions seem to be found chiefly in the chapters on Religion, in that on Natural Science and Philosophy and in the concluding chapter. In the first he defines religion as 'man's sense of the disposition of the universe to himself.' Parts of his chapter on Natural Science will be familiar to those who have read his pertinent criticism of Mr. Ward's 'Naturalism and Agnosticism' in the first volume of this JOURNAL. The concluding chapter points out the present tendency of the older systems to make concessions and thus to approach and converge. In the final section the author suggests a possible basis for new construction. He points out the collective character of the universe and the moral implications of such a pluralistic philosophy. Reality 'must be regarded as a collection of all elements, relations, principles, systems, that compose it. All truths will be true of it, and it will be the subject of all truths. Reality is at least physical, psychical, moral and rational. That which is physical is not necessarily moral or psychical, but may be either or both of these. . . . There is, then, an indeterminism in the universe, a mere coincidence of principles, in that it contains physical, psychical, moral, logical orders, without being in all respects either a physical, a psychical, a moral or a logical necessity. Reality or experience itself is neutral in the sense of being exclusively predetermined by no one of the several systems it contains. But the different systems of experience retain their specific and proper natures, without the compromise which is involved in all attempts to extend some one until it shall embrace them all.'

All of which sounds to the reviewer like an assertion of the right of the special problems to be solved each on its own merit against the tendency to let some one problem dominate over the other problems.

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Betting and Gambling: A National Evil. Edited by B. S. ROWNTREE. New York, The Macmillan Co. 12mo. xii + 250 pp. $1.60 net.

This is a collection of papers edited by B. Seebohm Rowntree. It is reviewed in this JOURNAL, not so much for what it contains, as for what it does not attempt to do. What is needed is a more thorough, profound and systematic study of this evil, destructive alike to society and to the individual, than here is undertaken. In order to do this a long and difficult investigation of the biology, psychology, sociology, economics

and ethics of the practice must be undertaken, before any adequate or really possible remedy can be found. Because of the lack of just this solid foundation some of the papers of this book fail of adequacy; as, for example, that on 'The Repression of Gambling,' by the editor. Others, however, significantly imply this vast complexity of the problem, notably, that by J. Ramsay McDonald, on 'Gambling and Citizenship.' The paper by John A. Hobson, on 'The Ethics of Gambling,' valuable as it is, begins with a definition of gambling that is unsatisfactory. It is not 'The determination of the ownership of property by appeal to chance.' Much ownership of property is so determined that is wholly legitimate. There should be added to this definition the words, 'in which the gain of one is meant to be the loss of the other.'

On the whole the book is a valuable one and should be widely circulated. Such papers as that on 'Stock Exchange Gambling,' by A. J. Wilson, editor of *The Investor's Review,* and 'The Deluded Sportsman,' by a bookmaker, as well as others mentioned above, and the appendices on betting statics, bibliography, etc., are very illuminating. A cheap popular edition not only should find a ready sale, but the circulation of it should be pushed by all those agencies which have the welfare of society and the saving of individual men at heart.

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L'accident et le rationnel en histoire d'après Cournot. G. TARDE. *Revue de Métaphysique et de Morale,* May, 1905. Pp. 319–347.

Les rapports de l'histoire et de la science sociale d'après Cournot. C. BOUGLÉ. *Revue de Métaphysique et de Morale,* May, 1905. Pp. 349–376.

In the posthumous publication of selected passages from M. Tarde's lectures on Cournot great value is attached to the latter's delineation of the several tendencies that have prevailed in the intellectual and religious life of Europe, and even more to his success in discovering terms in which the interrelations of economic functions may be expressed quantitatively. Most space, however, is given to the following criticisms.

Chance plays in history a rôle far more important than that assigned to it by Cournot. For example, he errs in speaking of the intellectual development of modern Europe as an ordered and steady progress, in which the Reformation and the Revolution complete the work of the Renaissance. As a matter of fact, Luther led a flood of fanaticism that not only checked the march of reason, but, even as it now recedes, leaves a residue of obstruction in the Catholic policy of suppression it provoked. In general, Tarde finds no proof that events of to-day are directed towards, or are influenced by, the great events that are to come.

He contends, too, that Cournot's antithesis of chance to *reason,* in human history, rests on a confusion of the subjective, individual life with the objective phenomena of social life. It is as in a game of chess: in the mind of each player occur conflicts of ideas calling for a rational solution. Here chance is the antithesis to reason, though subordinate to it so far as chance associations subserve the rational solution. But, to the

observers, the game, as an objective, inter-individual fact, is controlled not by reason, but by the laws of the game. And so it is in the history of society, where chance is antithetic, not antagonistic to law.

M. Bouglé finds in Cournot a contribution to the dispute that, since his day, has waged to the point of tediousness, in which '*historiens-historisaunts*' have had to show that they can be scientists without being a subspecies of sociologist. Cournot thus describes the field of historical science, at least in part.

It deals rather with 'cosmological' or empirical laws than with theoretical or rational laws. That all mammals have seven cervical vertebræ is of the former class; that revolving fluid bodies tend to flatten at the poles, of the latter. The historian notes, too, the characteristics that prevail together at any time, and, also, wherever events repeat themselves in part, though his observations here attain to no universality; he notes the general direction and tendency of events, distinguishing therein, too, what is more important.

A task particularly pertaining to the historian because of the nature of his material, where chance and individuality play so great a rôle, is to distinguish the underlying *reasons* for an event from the 'efficient agents' or causes; and to note both those cases where those underlying reasons are so predominant that in the course of time the proper and efficient agent for their execution must appear, and also those cases, for such there are, where, in the balance of those impersonal forces, the great individual is revealed as a real, determining power, an incalculable element, whether in his presence or in his absence.

In history society is an active principle, working out its own laws distinct from those of the constituent individuals. Each society tends more and more to conform to laws common to all societies.

M. Bouglé objects that we can only speak of a society as a cause, when we know the law common to all societies under which it works. In general he objects to 'abysmal' separations of one science from another. There is but one type of law and science fundamentally.

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Traité de l'infini créé (Translation). NORMAN SMITH. *Philosophical Review,* Vol. XIV., No. 4, July, 1905, pp. 456–471.

This treatise, once ascribed to Malebranche, but now thought to have been written by Abbé Jean Terrasson, and proposing to clarify and develop the Cartesian notion of the 'indefinite,' has for its thesis 'that everything in nature—matter, spirit, number, duration—is actually and positively infinite.' The perfection, power and wisdom of God guarantee the actuality of an infinite, since any but an infinite result, as well as mode of action, are unthinkable on this presupposition. Furthermore, God has given us the idea of an infinite, and He would not give us ideas of non-existent things.

The argument in the sections on *Matter* and *Created Spirits* is alto-

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gether Cartesian. Matter is nothing but extension, and extension is intrinsically an infinite conception since it can have no limits. Infinites differ one from another; the infinity of matter is different from that of spirit. God's infinitude is altogether different from that of created beings. 'God is infinitely infinite.' Created spirit knows both matter and God—both infinites. If the known is infinite, then the knower must have some sort of infinity in order to have any notion of them. Furthermore, the goodness of God makes it impossible that God should discriminate and give infinity to matter and not to mind.

Concerning Number.—Descartes's 'indefinite' number of planets is increased to an infinite number. There is an infinite number of creatures in the universe, and these are men, for 'it would be needless for matter to be infinite unless it were made use of by intelligent creatures. . . . Now as the inhabitants of this earth can only profit by a very small part of the universe, there must be other intelligent creatures who profit by the rest.' The objection that this is untenable on account of the difficulty of redemption for the inhabitants of these planets, is met by the assertion of a possible plural hypostatical union of God and men. Again, suppose the inhabitants of some of the planets had not sinned, on the postulate of the goodness of God, it is more probable that God would have sent His greatest blessing to mankind, viz., a Savior, to those sinless planets than to the sinners, and yet he has given the boon to the latter also.

Let us digress for the moment; if we carry this argument further, it will lead toward pessimism for the planets where there is sin. In addition, how, on the basis of the goodness of God—the central principle of the whole argument—can he account for the existence of sin on one planet and not on all? How does this square with his earlier argument that mind is infinite because God would not discriminate in favor of matter?

To return to the treatise. *Concerning Duration.*—Matter as a whole must endure. Change is merely a change of form, for planets are disintegrated and others formed, but the general type persists. The destruction of a planet involves the resurrection of all the men inhabiting it. These become angels.

His cosmogony is: 'God at every moment creates an infinity of spirits. . . . If God commences at this moment to create an infinity of spirits, He must give all of them bodies. For this purpose alone, then, he must create an infinite matter. . . . The universe being thus arranged, God creates, the moment following, another infinity of spirits.' This process continually involves a corresponding and infinite increase in the creation of matter. Therefore, 'we can conceive, not only of an actual infinite, but also that God can infinitely increase the infinite.'

The first principle of the whole treatise 'is that God . . . always does that which He can do, and He can only act in doing all that He can do. There is nothing, our system maintains, merely possible, and all that can be, is, or one day will be.' In conclusion, we may say that the whole argument rests upon this principle. If we accept this as necessary, and

also decide that such terms as the 'infinitely infinite,' and the statement, 'the infinite increases infinitely' are not mere logomachies, but logically and ontologically possible, then the author's conclusion must have great weight for our own thought. PHILIP H. FOGEL.

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Note sur la classification des connaissances humaines dans Comte et dans Cournot. R. AUDIERNE. *Revue de Métaphysique et de Morale,* May, 1905. Pp. 509–519.

Both Comte and Cournot were influenced by that interest in social science which was the fruit of the Revolution and of the revival of history. Comte was impelled by a love of unification and by optimistic faith in the power of mind to reduce all laws to one general character and perfection. '*L'esprit antinomique*' of Cournot, on the contrary, recognized in the material furnished by history elements that are in themselves not amenable to expression in a general form, and in the laws that may be found he saw irreducible specific characters that give to the several sciences methods of their own, rather than, as in Comte's system, several degrees of perfection in attaining the one true method, the mathematical.

Cournot, therefore, rejected Comte's scale or ladder of the sciences. The social sciences no doubt depend on the progress of the biological, but only in part; for the former have in the science of order, combinations and probabilities an instrument of their own through which their advance has lately been more rapid than that of the latter. Moreover, he notes that, as regards simplicity and susceptibility to mathematical treatment, the social sciences at one end of the scale approach more nearly to the astronomical at the other than do the sciences that intervene, and that this mathematical, calculable character applies most of all to the highest and most complicated types of society, and will increase with the perfection and complexity of social life.

With these general differences in mind we may note that to Comte's three divisions, the practical sciences, the abstract-theoretical and the concrete-theoretical, correspond Cournot's divisions, the technical sciences, the 'speculative théorique' or natural, and the 'speculative-cosmological' or historical. Comte and Cournot both class empirical psychology as a biological science, both recognize the legitimacy of certain sociological studies still termed psychological, and both condemn as unscientific the 'subjective,' introspective method, and on similar grounds.

Neither Comte nor Cournot classes philosophy as a science. Comte, however, dominated by his belief in the homogeneity of knowledge, looked on philosophy as simply the unity of the sciences, requiring no distinct treatment. Cournot holds a different and a very interesting view on this point. Philosophy is not science, because it is neither essentially progressive nor rigorously impersonal. It is the product of a special capacity that unites with the scientific in the natural development of intellectual activity. Its results are not to be verified by sensible experience, but are to be affirmed by the 'philosophic sense.' It is as essential to the perfection of human nature as is science or art. PERCY HUGHES.

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JOURNALS AND NEW BOOKS

REVUE DE PHILOSOPHIE. May, 1905. *Dieu dans la philosophie de M. Bergson* (pp. 495–518): X. MOISANT. – M. Bergson's empirical method of approaching the problem, from the point of view of our continuous synthetic time-experience, is not essentially different from the scholastic logical method. The empirical method contains more psychological data, but uses the same analogies and deductions as the scholastic. *La théorie physique: le choix des hypothèses* (pp. 519–559): P. DUHEM.– Logic imposes upon the physicist only three conditions in his choice of hypotheses: self-consistency, mutual consistency and agreement with experimental laws. Each hypothesis is the result of progressive evolution; it is a slow growth, not a sudden creation. This is illustrated in the history of the hypothesis of universal gravitation. *L'imagination: les images motrices* (pp. 560–578): E. PEILLAUBE. – Motor images are not so obvious to unpracticed minds as visual or tactual; their existence needs demonstration. The motor image is an essential constituent of sensation and all the active side of the inner life. *Analyses et Comptes Rendus:* A. Mollière, *Une famille médicale lyonnaise au XVII^e siècle:* T. DE VISAN. P. Bourget et Michel Salomon, *Bonald:* T. DE VISAN. J. Baruyi, *Leibniz: trois dialogues mystiques inédits:* X. MOISANT. Sully-Prudhomme, *La vrai religion selon Pascal:* P. CHAINE. Irving King, *The Differentiation of the Religious Consciousness:* C. A. DUBRAY. G. Bellerini, *Il principio di causalità e l'esistenza di Dio:* G. DE PASCAL. G. Weill, *Histoire du mouvement social en France:* G. DE P. A. Fouillée, *La propriété sociale et la démocratie:* G. DE P. Ch. Antoine, *Cours d'économie sociale.* Périodiques français. Sommaire des revues. L'enseignement philosophique. Chronique.

NOTES AND NEWS

WILLISTON S. HOUGH, Ph.D., professor of philosophy at the University of Minnesota, 1900–04, has been appointed professor of philosophy in the George Washington University at Washington.

IT is announced that Professor Josiah Royce, of Harvard University, will give a course of lectures at the Johns Hopkins University in January, 1906, on 'Aspects of Post-Kantian Idealism.'

DR. ALBERT LEFEVRE, of the department of philosophy of Tulane Unisity, has been elected to the chair of philosophy in the University of Virginia.

DR. BRUCE R. PAYNE, of the department of philosophy and education of the College of William and Mary, has been elected to the chair of secondary education in the University of Virginia.

PROFESSOR E. B. TITCHENER'S 'Experimental Psychology, Quantitative' is in press and is expected to appear in September.